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| EXAMINER |
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ARNOLD, ERNST V

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1613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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| Office Action Summary | Application No. 10/520,471 | Applicant(s) HUSSON ET AL. | |
| | Examiner ERNST V. ARNOLD | Art Unit 1613 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period **will** apply and **will** expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply **will**, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-8 have been cancelled. Claim 31 is new. Claims 9-31 are pending and under examination.

Withdrawn rejections:

Applicant's amendments and arguments filed 7/30/10 are acknowledged and have been fully considered. Any rejection and/or objection not specifically addressed below is herein withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 9-31 remain/are rejected under 35 U.S.C. 103(a) as being unpatentable over Virtanen (WO 97/38940) in view of Bleakely et al. (US 5,833,747) and Izaki et al. (US 3,970,629).

Applicant claims:

9. (Currently Amended) A process for the preparation of an aqueous suspension of fluid mineral matter from a concentrated cake comprising performing two separate stages of filtration, wherein in the first filtration stage, a pre-layer of mineral matter is formed on a filtration membrane in the absence of a dispersant agent, and in the second filtration stage, which is operated continuous to the first filtration stage, the pre-layer of mineral matter from the first filtration stage is treated on the filtration membrane with a second aqueous suspension containing a dispersant agent to obtain a filtrate and a concentrated cake, ~~and obtaining an aqueous suspension of fluid mineral matter from the concentrated cake.~~

Determination of the scope and content of the prior art

(MPEP 2141.01)

Virtanen teaches on page 1, lines 6-11:

According to the method of this invention PCC is first separated from the reaction mixture of the causticizing reaction by filtration, and the PCC-containing precipitate collected on the filter, or the filtration cake, is washed with water in order to separate by-products and impurities from the PCC product. This invention also relates to the (secondary) neutralization and dispersion of calcium carbonate treated according to the manner described above.

Virtanen teaches methods of obtaining calcium carbonate filter cakes with multiple filtrations (claims 1-17). Virtanen teaches in claims 1, 7 and 8:

1. A method for recovering precipitated calcium carbonate, PCC, according to which method

- PCC is separated from the reaction mixture by filtration, and
- the PCC-containing precipitate collected onto a filter (3-5;21) is washed with water to separate by-products from the PCC,

characterized in that

- PCC is washed with washing water into which carbon dioxide is dissolved in an amount that is sufficient to convert at least a portion of the hydroxy compounds in the precipitate into the corresponding carbonate compounds.

7. The method according any of the preceding Claims, wherein a dispersing agent is added to the neutralized precipitate, whereafter the precipitate is suspended.

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8. The method according to Claim 7, wherein dispersion is carried out in two stages such that most of the dispersing agent is added to the filter cake in the filter (3 - 5; 21), whereafter the filtered cake is suspended.

Essentially, the Examiner interprets Virtanen to disclose **a first filtration** of the PCC to separate it from the reaction mixture and is collected onto a filter thus obtaining the filter cake in the filter. No dispersing agent is used. In **a second filtration** step, dispersing agent is clearly added to the filter cake in the filter that was already filtered by a first filtration step (pressure filtration is taught; page 1, line 15 and page 4, lines 12-14) to obtain a filtrate and a concentrated cake which is intrinsically compressed. In the

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absence of evidence to the contrary, the filtrate contains a near-zero quantity of dispersant. The process of Virtanen is in a continuous stream (page 4, line 13). The reason for the washing step after the first filtration is (page 2, lines 7-10):

remains in the form of a hydroxide. Accordingly, the product of the causticizing reaction, calcium carbonate, contains lye and calcium hydroxide as by-products and impurities, which renders it necessary to wash the PCC carefully with water and to neutralize it before a useful product can be obtained. As far as the concentration of the lye solution is

Virtanen clearly teaches filter membranes (page 11, line 14). The filtered cake mixed and undergoes a shear (column 11, lines 5-6; and claims 9 and 10) which reads on a shear and suspended which reads on aqueous suspensions of mineral matter of instant claims 29 and 30.

And from page 8, lines 13-22:

The dispersion step is most suitably carried out in two stages, whereby most of the dispersing agent is added to the filtered cake in the filter, whereafter the rest is added while the filtered cake is suspended. This enables adjusting the viscosity of the PCC suspension accurately to the desired value. Typically the desirable value for viscosity is, for example, 100 - 500 cP, preferably about 200 - 400 cP. The addition of dispersing agent in the filter is most suitably carried out such that about 60 % of the dispersing agent is added to the PCC cake in the filter. The pressure variation is the same as is used for washing, and the solids content of PCC is about 40 %. The aqueous filtrate is used for washing. The rest of the dispersing agent, that is, about 40 %, is only added to the mixer when the PCC cake is being resuspended. The material is dispersed rapidly as it already contains some dispersing

Thus Virtanen fairly teaches a method of that obtains a filter cake that is rapidly dispersed which applicant calls: "fluid mineral matter". Since water is disclosed by

Virtanen then the solution would be aqueous. Virtanen teaches on page 8, lines 8-11:

Because the PCC precipitate contains very small particles, the van der Waals forces between the crystals are quite strong, and it is not possible to manipulate the particles without the aid of a dispersing agent. Commonly known polyelectrolytes, like polyacrylate, may be used as the dispersing agent or disperser.

Virtanen teaches using high shear in the method (page 11, line 6). Virtanen teaches a use in paper coating (page 1, line 23).

Bleakley et al. teach paper coating pigments and their production (title and abstract; and claims 1-7). Bleakley et al. teach precipitated calcium carbonate (PCC) products with dispersants (column 5, lines 29-44) present from 0.01 percent to 2.0 percent by weight based on the dry weight of the PCC present (column 5, lines 14-28) and in claim 4:

4. A method as claimed in claim 1 wherein step (b) precedes step (c) and a dispersing agent for the PCC is added to the aqueous PCC-containing suspension prior to step (c).

Bleakley et al. teach adding other pigments such as titanium dioxide (rutile type), kaolin clay and ground calcium carbonate (column 5, lines 56-67 and column 8, lines 29-31).

Bleakley et al. teach a method of making an aqueous fluid suspension containing dry calcium carbonate comprising the steps of dewatering a suspension of ground precipitated calcium carbonate in a pressure filter (thus reading on compression) to give a solid cake and then re-dispersing the cake in water with 0.8 wt% sodium polyacrylate

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dispersing agent in a high shear mixer to give a fluid suspension (column 7 example 1 and column 8, Table 2).

Izaki et al. teach paper coating compositions comprising the pigment aluminum hydroxide (abstract and claims 1-13).

Ascertainment of the difference between the prior art and the claims

(MPEP 2141.02)

1. The difference between the instant application and Virtanen is that Virtanen do not expressly teach a second filtration stage which is operated continuous to the first filtration stage .

2. The difference between the instant application and Virtanen is that Virtanen do not expressly teach controlling the amount of dispersant in the filtrate by measurement of the electrical conductivity of the filtrate; stopping as soon as the conductivity increases and using a HI 8820N conductivity meter. This deficiency in Virtanen is cured by the teachings of Bleakley et al.

3. The difference between the instant application and Virtanen is that Virtanen do not expressly teach adding aluminum hydroxide, titanium dioxide (rutile type), kaolin clay and ground calcium carbonate as the mineral matter. This deficiency in Virtanen is cured by the teachings of Izaki et al. and Bleakley et al.

Finding of prima facie obviousness

Rational and Motivation (MPEP 2142-2143)

1. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to continuous filter the cake of Virtanen wherein a second aqueous suspension filtration stage which is operated continuous to the first filtration stage and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because: 1) selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. (*In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) (); *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930) (Selection of any order of mixing ingredients is prima facie obvious.); and 2) the same result is produced in the absence of evidence to the contrary. It appears all that Applicant has done is re-order the filtration steps to obtain the concentrated filter cake.

2. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to controlling the amount of dispersant, as suggested by Bleakley et al, in the filtrate by measurement of the electrical conductivity of the filtrate; stopping as soon as the conductivity increases and using a HI 8820N conductivity meter the cake of Virtanen, and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because: 1) Bleakley et al. provide guidance on how much dispersing agent to add to the same type of compositions; and 2) one of ordinary skill in the art might want to know how much dispersant is in the filtrate. It is the Examiner's position that since Bleakely et al. teach adding the **same amount** of the **same dispersant** as claimed by applicant and the only

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requirement is adding the dispersant to the cake then what does it matter what the conductivity of the filtrate is because the same amount of dispersant is added and it would have the same effect. This limitation appears to be superfluous to the Examiner because the same aqueous suspension of fluid mineral concentrate is obtained in the absence of evidence to the contrary.

3. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to add aluminum hydroxide, titanium dioxide (rutile type), kaolin clay and ground calcium carbonate, as suggested by Izaki et al. and Bleakley et al., to the composition of Virtanen and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because Virtanen teach adding other pigments to the composition. "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). A

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of

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ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Response to arguments:

Applicant argues that there is no teaching or suggestion in Virtanen that the washing step and treatment with calcium dioxide can be eliminated. Applicant also argues that the final neutralization with an acid is preferred before the addition of the dispersant. The Examiner can only respond by asking "so what"? The instant claims do not exclude such steps and the instant claims can include other method steps because the claim language is 'comprising'. Applicant's conclusion is that one skilled in the art would not arrive at the two separate stages of filtration of the claimed invention is thus invalid. Regarding Applicant's interpretation of Bleakley and Izaki, the Examiner has stated above how the two references are being relied upon because neither Bleakley or Izaki is the primary reference in the rejection.

Applicant argues that during production of the aqueous mineral suspensions, some processes lead to weakly concentrated aqueous suspensions that must be concentrated to offer them to the end user and filtration is one of the means known to concentrate suspensions. However, filtrations have led to cakes which are so compact that a dispersant is typically used after the filtration stage, followed by the use of high mechanical energy to return the cakes to suspension. (Please note that instant claim 9 makes a concentrated cake and instant claim 30 uses shear, high mechanical energy, to make a suspension so the instant method seems to suffer from the same deficiency in the art as noted by Applicant.) The prior art simply does not teach or suggest the

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desirability of performing two separate stages of filtration of the claimed invention, wherein in the first filtration stage, a pre-layer of mineral matter is formed on a filtration membrane in the absence of a dispersant agent, and in the second filtration stage, which is operated continuous to the first filtration stage, the pre-layer of mineral matter from the first filtration stage is treated on the filtration membrane with a second aqueous suspension containing a dispersant agent to obtain a filtrate and a concentrated cake. What is lacking in this argument is what the ordinary artisan might find desirable about the instant method. In other words, what makes the instant method superior to the prior art and hence desirable to the artisan. It is simply not clear from Applicant's arguments that the instant method does anything different from the prior art methods and is therefore the instant method remains obvious to the ordinary artisan.

Respectfully, Applicant merely argues and has not shown any improvement or unexpected result from the instant method steps. The rejection is maintained.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERNST V. ARNOLD whose telephone number is (571)272-8509. The examiner can normally be reached on M-F 7:15-4:45.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Kwon can be reached on 571-272-0581. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ernst V Arnold/
Primary Examiner, Art Unit 1613